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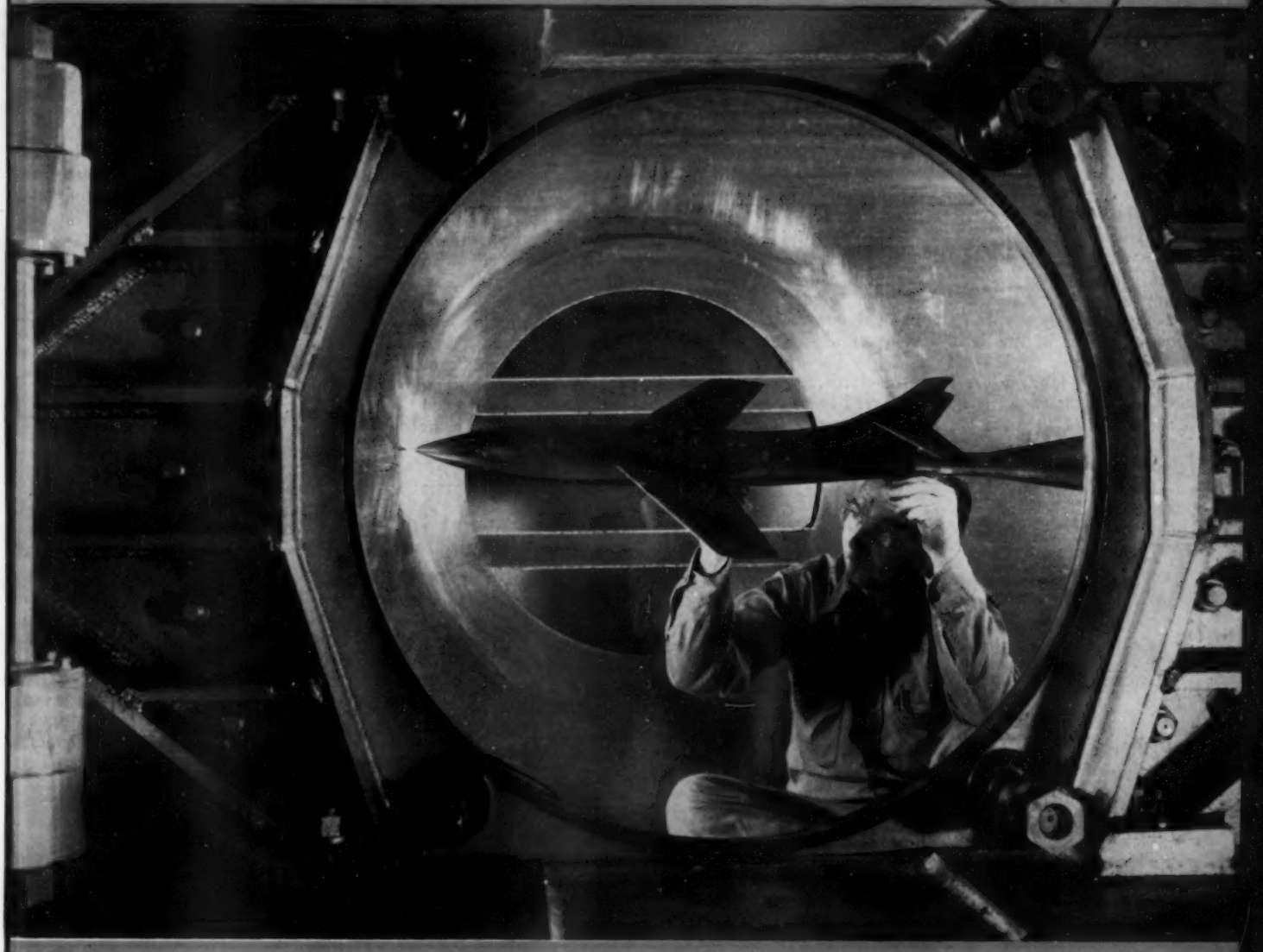

Supersonic Research

See Page 309

A SCIENCE SERVICE PUBLICATION

PSYCHOLOGY

Sickness From Worries

Study of illnesses of telephone operators with like backgrounds shows that hard work, worry and disappointments can make persons more susceptible to sickness.

► MUCH HARD work, worry and many disappointments can make a person more susceptible to sickness of all kinds, from colds to nervous breakdowns and accidents.

Evidence for this was presented by Drs. Lawrence E. Hinkle, Jr., and Norman Plummer of New York Hospital Cornell Medical Center, New York, at the meeting of the American Federation for Clinical Research in Atlantic City, N. J.

A study of all the illnesses which had occurred in a group of 1,297 telephone operators in New York City furnished the evidence. This group is made up chiefly of people of the same sex, age, place of residence, place and type of work, economic, social and cultural background. None had shown signs of significant illness when employed in their late teens, and a record was available of every subsequent illness of each woman for up to 35 years thereafter.

Some of these women who started out so much alike in health had a lot of all kinds of illness, while others had few illnesses of any kind. More than two-thirds, 69%, of the attacks of sickness occurred in only 37.8% of the women, and the same women fell into the high and low illness groups year after year.

These differences in total amount of illness could not be accounted for by any malingering, psychological disturbances, heredity, economic background, nutrition or exposure to infection. Twenty of the frequently sick women, 20 of the well women and others in between, selected at random, were examined and interviewed at length.

The telephone operators who had the most sickness, the doctors found, were widows and divorcees with small children to care for.

"They had many responsibilities and worries, much hard work and many frustrations," the doctors reported. "They were 'struggling' through a life of disappointments, insecurity and hard work.

"The healthiest telephone operators were single women without family responsibilities with no desire to be married, who were all content and comfortable with their occupations and their life situation."

In contrast to the well women, the doctors pointed out, the ill women had been exposed to stressful life situations much of the time throughout adult life. The alteration in bodily function which accompanied their attempts to adapt to these situations appeared to be the most important factor in their susceptibility to disease.

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GEOLOGY

Uranium Hunting Hints

► LOOK FOR uranium only in certain areas of the world and in certain kinds of rock formations if you wish to find rich deposits of the ore.

Time spent poking a Geiger counter into all kinds of geological formations is wasted, according to Donald L. Everhart, geologist of the division of raw materials, U. S. Atomic Energy Commission. He described to members of the New York Academy of Sciences the classification of uranium deposits worked out as a result of the stepped-up search now going on.

Locations of the richest uranium deposits are the hydrothermal veins in western Europe, western and central Africa, along the western margins of the Canadian Shield and along the entire length of the Cordillera of North and South America, said Dr. Everhart. The widespread distribution of small quantities of uranium in other localities occurs because uranium compounds dissolve in many kinds of ground water and combine with carbonaceous material. Geologically, uranium behaves much like iron.

Next to the rich vein deposits, the best place to look for the radioactive mineral is along old stream beds. Here geologists are divided in opinion as to whether the uranium compounds were deposited in the clay as it silted out of the running water, or whether they welled up from deeper waters and were added to the clays from below.

Three time epochs seem to have contributed the richest store of uranium to the rocks where it is now mined. The oldest uranium-bearing rocks are contemporary with the very dawn of life on this planet, at the end of the Pre-Cambrian era. A second time of deposition of uranium ore was when the giant reptiles left the swamps and moved to dry land, at the end of the Paleozoic age. Again at the end of the age of reptiles, when man's earliest four-footed ancestors appeared, uranium was deposited in early Tertiary rocks. What connection there is between these times of geologic change and the formation of uranium ore geologists have not yet worked out.

Sedimentary deposits containing workable quantities of uranium are known as carnotites, copper-uranium and asphaltite, occurring in Utah, Colorado, South Dakota, Wyoming and Pennsylvania, and limestones and phosphorites, occurring mostly in Florida and Tennessee.

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ICHTHYOLOGY

Fishes Have Gland To Regulate Calcium

► FISHES DO have what corresponds to the parathyroid gland in higher animals for regulating calcium use, two American Museum of Natural History scientists in New York have discovered.

Previously it was thought that calcium metabolism glands made their first evolutionary appearance in the amphibians—frogs, etc.— even though fishes lower on the scale of life admittedly were able to use calcium to build bones. The parathyroid function of bony fishes resides in their ultimobranchial gland, Priscilla Rasquin and Libby Rosenbloom reported to the American Society of Ichthyologists and Herpetologists meeting in New York. This was shown by experimentally produced hormone imbalance.

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METEOROLOGY

For Safety, Acknowledge Catastrophe Can Happen

► PEOPLE WHO design houses and build dams and levees are afraid to acknowledge the risks of catastrophe.

This is the opinion of a man who spends his life trying to figure out how bad a catastrophe like a flood on the Mississippi or a tornado in the Midwest can get. He is R. W. Schloemer of the Hydrometeorological Section of the U. S. Weather Bureau. He told the American Meteorological Society meeting in Washington that it is the duty of hydrometeorologists to figure out the maximum possible weather catastrophes so that designers can incorporate these estimates in their building plans.

Until recently such estimates had to be made up largely of well informed guesswork. He pointed out that to know how high the water of the Mississippi and the Missouri rivers can get at St. Louis, one has to take into account rainfall over an 800,000-square-mile drainage area and the snow which has fallen on distant peaks.

However, he said, the application of statistical probability theories to hydrometeorology is making the estimates more exact.

Obviously, designers of buildings and dams cannot always build them to withstand the big catastrophe which may never happen in the lifetime of the structure. A compromise has to be made between several factors, one of which is the hydrometeorologist's estimate.

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GEOPHYSICS

Swirls in Earth's Core

Irregularities in earth's rotation rate explained by theory holding our planet's core contains jet streams and swirling currents similar to the atmosphere's.

➤ JET STREAMS and swirling currents make the motion of earth's core similar to that of the upper atmosphere, the American Geophysical Union Meeting in Washington was told by Dr. S. K. Runcorn of Cambridge University, England.

Irregularities in the rate of rotation of the earth are explained by such motions of a liquid interior for our globe. The theory also accounts for the known rapid changes in earth's magnetic field.

Seeking to bring together several effects of the earth's rotation, Dr. Runcorn suggested that the earth's magnetic field may result from dynamo-like action, or that temperature currents, like those in a boiling kettle, might create thermo-electric currents in the fluid heart of our planet.

Between the liquid core and the solid mantle of the earth lies a transition layer revealed by earthquake waves, which was described to the geophysicists by Dr. Francis Birch of Harvard University. He urged better understanding of the nature of the material making up this layer under the great pressures at its depth.

Temperature differences from the upper rocky crust to the liquid interior of the earth probably vary between 1,300 degrees and 2,400 degrees centigrade, Dr. J. Verhoogen of the University of California, Berkeley, Calif., told the meeting. The three scientists spoke at a symposium on the earth's interior.

How a slight change in the amount of carbon dioxide in the atmosphere could and probably has changed the climate of the world was reported to the meeting's section of meteorology by Dr. Gilbert N. Plass of Johns Hopkins University. Carbon dioxide comes into the air with the breath of animals and from fermentation and decay of plants and burning of fuels. It is taken out of the air by plants in their growth processes and by the weathering of rocks and metals.

Although it makes up only a few hundredths of a per cent of the atmosphere, Dr. Plass calculates that half again as much as is now present would raise the surface temperature of the earth more than two degrees. He believes the influence of carbon dioxide in the air has been neglected by recent students of the earth's history.

Which way the wind blew at the end of the last ice age is indicated by wind-built terraces around Lake Bonneville in central Utah, described to the geophysicists by Dr. Ronald L. Ives of Cornell Aeronautical Laboratory, Inc.

Studies of the disastrous storms in the Irish and North seas on Feb. 1, 1953, made by Drs. H. W. Dubach and W. E. Maloney of the U. S. Navy Hydrographic Office, explained to the scientists how one event after another built up the storm tides. Drs. R. E. Burns, L. B. Bertholf and C. C. Bates of the same office presented a similar study of the destructive storm surge of March 18, 1952, along the Gulf Coast.

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RADIO ASTRONOMY

Radio Stars Doubled; 200 More Discovered

➤ THE NUMBER of known radio stars has been doubled by a sky survey conducted at Ohio State University, Dr. John Kraus and Sol Matt told the joint meeting of the International Scientific Radio Union and the Institute of Radio Engineers meeting in Washington.

About 200 celestial sources of radio waves can be added to the 200 previously known, they reported. Radio stars are spotted by the radio waves they send forth, but in most cases they are not identified with any object visible with an optical telescope.

Some of the new radio stars are associated with galaxies, or island universes, at distances of millions of light years from the earth. They were spotted by a radio telescope consisting of 48 corkscrew antennas mounted on a steel framework 160 feet long that scans at 250 megacycles.

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MEDICINE

Allergy to Wheat Looks Like Mumps

➤ FOR NINE years, a young Texas housewife had what looked like mumps every few weeks. Cause of the painful and embarrassing condition was finally discovered to be an allergy to wheat. With this eliminated from the diet, the young woman has been free of her mumpsy state.

Her case, one of only about 15 such reported in medical literature, was reported by Dr. Boen Swinny of San Antonio at the meeting of the American College of Allergists in Chicago.

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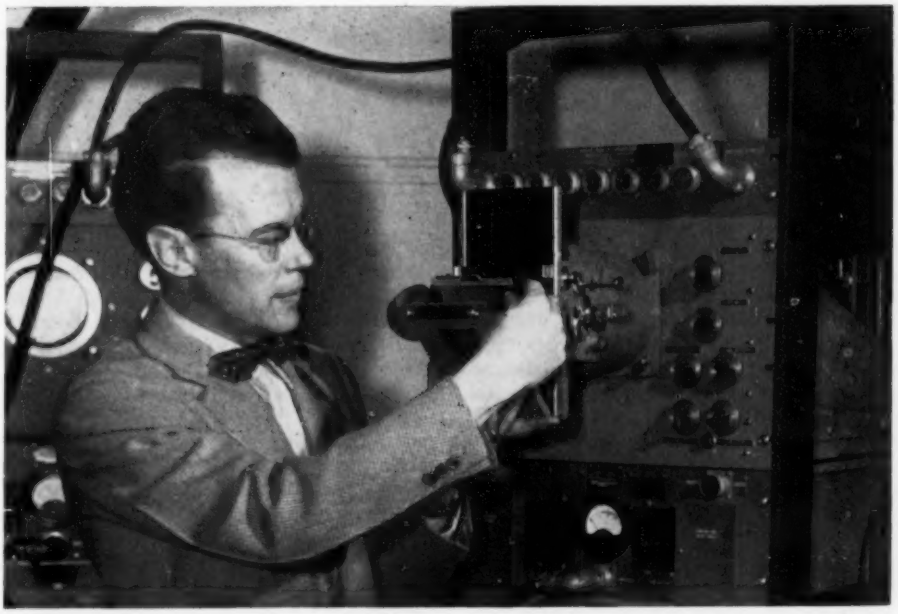

"WRITING FASTER-THAN-LIGHT" — With such equipment, Harold J. Peake of the Naval Research Laboratory, Washington, has made a spot move across the face of a cathode ray tube at faster-than-light speed. No matter is involved, and other physicists have approached such speed, although this is believed to be the first time the over-light-speed has been achieved. The spot, produced by an electron beam, moves across the screen at a speed of 13,000 inches in a millionth of a second. In this time, light, which has a velocity of 186,000 miles per second, travels 12,000 inches. To illustrate the phenomenon, play the hard stream from a garden hose against a large wall, carefully making jerky loops and kinks. These will show on the wall at a faster rate than the hose nozzle moves. A rapidly changing voltage gives the same sort of jerk to the electron beam moving toward the screen, thus producing the faster-than-light "writing."

PSYCHIATRY

Psychopaths Are Treatable

Psychodramas, in which plays were formed entirely out of fantasy of patients, found way in which the virtually untreatable psychopaths can be helped.

➤ A WAY has been found to treat the "virtually untreatable" psychopath.

Often involved in sex and other crimes the psycopath has been "society's and psychiatry's greatest headache," in the words of Dr. Walter Bromberg, Sacramento, Calif., psychiatrist who for many years has been identified with criminologic psychiatry and who, until recently, was director of the Mendocino, Calif., State Hospital.

"Psychiatry has found that the sardonic, snarling mask of the psychopath hides the frightened, lonesome face of a neurotic character," Dr. Bromberg declared at the meeting of the American Psychiatric Association in Los Angeles.

The difficulty in treating the psychcpath, he said, can be solved by two moves: 1. A firm authoritarian handling of the unwilling patient, usually in institutions; 2. Group therapy. In the group treatment, Dr. Bromberg explained, an atmosphere of play allows the doctor and, through him, society to be seen "as if" they were not intolerant and vengeance-seeking toward the psychopath.

"Thus," Dr. Bromberg said, "the psychopath's defensive character-front is thawed."

"Experiences with adult sexual deviates paralleled experiences with a group of psychopatic boys under this treatment. At first both groups were anxious lest they be considered insane, then became relaxed, releasing tension in aggressive behavior, then showed deep dependence on the therapist (doctor) and staff and finally acted out their inner problems.

"The technique used was that of psychodrama in which the plays were formed entirely out of the fantasy of the patients and interpreted by the therapist and staff.

"In this work the defensiveness of the patients and the defensive anger of society toward the patients must both be studied. This is a complex and difficult field," Dr. Bromberg pointed out, "but well worth the effort involved."

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PUBLIC HEALTH

Rules for Sneakers

➤ "CAN I go barefoot?" "Can I wear my sneakers today instead of shoes?" These are questions many parents will be hearing with the start of summer if not before.

Answers to them were given in the *Journal of the American Medical Association* (April 18) by Dr. Louis Starr of Brooklyn, N. Y. Dr. Starr is associated with the department of orthopedic surgery of New York University College of Medicine.

"In the house," he said, "barefoot walking should be at a minimum. A child may be allowed to walk barefoot in the sand or on the grass. This is excellent exercise for foot and toe muscles."

His answer to the sneaker question was: "Sneakers are very flexible and are ideal for athletic activities such as in the gymnasium and on the tennis court. They are not intended for use all through the day, and they are not intended to replace shoes. They may be worn for limited periods of time when a child is indulging in some athletic pursuit."

Answers to some other questions parents often ask were:

An infant should start to wear shoes as soon as he maneuvers about to any considerable extent outside the playpen. However, if an infant has weak feet, he should wear adequate shoes as soon as he is able to draw himself up into a standing position.

High shoes are preferable for infants as they are easier to keep on, he added. Older children should be fitted with low shoes, as they are cooler and dryer and afford adequate protection.

Slippers are a convenient hygenic measure provided they are limited to use for which they are intended. They should not be used just because the child is in the house. They should not be used when the child is allowed up and about the house during convalescence from an illness.

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ORNITHOLOGY

San Benedicto Wren Joins Extinct Dodo Bird

➤ THE SAN Benedicto Island wren has joined the Dodo bird and the American passenger pigeon as birds of extinction, and its demise was much more sudden and spectactular than that of the other two fowls.

Bayard Brattstrom, University of California at Los Angeles zoologist, states that after probably more than 100,000 years of unique existence on the lonely isle off the coast of Mexico, this entire sub-species of wren was wiped out in the mighty upheaval of the birth of the island's new volcano.

There is a slight possibility that a pair of the birds may have escaped to carry the line elsewhere. But the nearest land is an island 32 miles away, so the zoologist holds little hope that the tiny birds made their way there.

The thick layer of volcanic ash covering the island has made it uninhabitable for animals or plants for some time to come, Mr. Brattstrom says. His observations were made in connection with a Scripps Institution of Oceanography study of this region.

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PSYCHIATRY

Mother to Blame If Little Babies Cry

➤ IT IS a mother's fault if the new baby cries a lot and is colicky at three months. A study showing this was reported by Drs. Ann H. Stewart, I H. Weiland, Allan R. Leider, Charles A. Mangham and Herbert S. Ripley of the University of Washington School of Medicine, Seattle, at the meeting of the American Psychiatric Association in Los Angeles.

Of 18 babies studied with their parents from birth to six months, six cried only for obvious reasons such as hunger or cold. These babies had mothers who felt sure of what to do for their babies and how to do it. After the first few weeks they could decide by watching their babies how much to hold, feed or care for them so as to make them very comfortable.

The other babies all cried a lot, eight of them for as long as seven out of 24 hours, though warm and fed. They usually cried for this long period at the same time each day. Their mothers were inconsistent in their care. Sometimes they fed the babies often, other days they held off feeding the baby even though he acted hungry.

Some days they picked the baby up whenever he showed a little restlessness, other days they ignored the crying for long periods. One mother even put cotton in her ears to avoid hearing her son cry but did nothing for him.

The babies who could anticipate being made comfortable whenever they could see or hear an adult and who cried little also gained steadily in height and weight and did not have vomiting spells. The babies who cried a lot seemed to associate the presence of an adult with discomfort and would begin to cry if they saw one. They did not gain and showed disturbances of digestion, circulation and muscle function.

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ENGINEERING

Car Lights Rival Pinball Machine

➤ THE WELL-DRESSED automobile wears 38 light bulbs, although the 1953 average is only 20. But in 1940, the fashion was about 13.5 lights per car.

Today's car often has lights tucked away in the glove compartment and trunk as well as in conspicuous locations such as the dash panel. Val J. Roper, General Electric automotive lighting engineer, lists these lights:

Three instrument panel and three interior lights; two head-lamps, front turn signals, rear turn signals, license plate, fog, turn signal indicators, courtesy, and back-up lights; one each for head-lamp beam indicator, parking brake indicator, clock, glove compartment, radio panel, ignition switch, map, dome, under hood, trunk, hand spot, cigarette lighter, inner control spot, ash tray, automatic transmission and compass.

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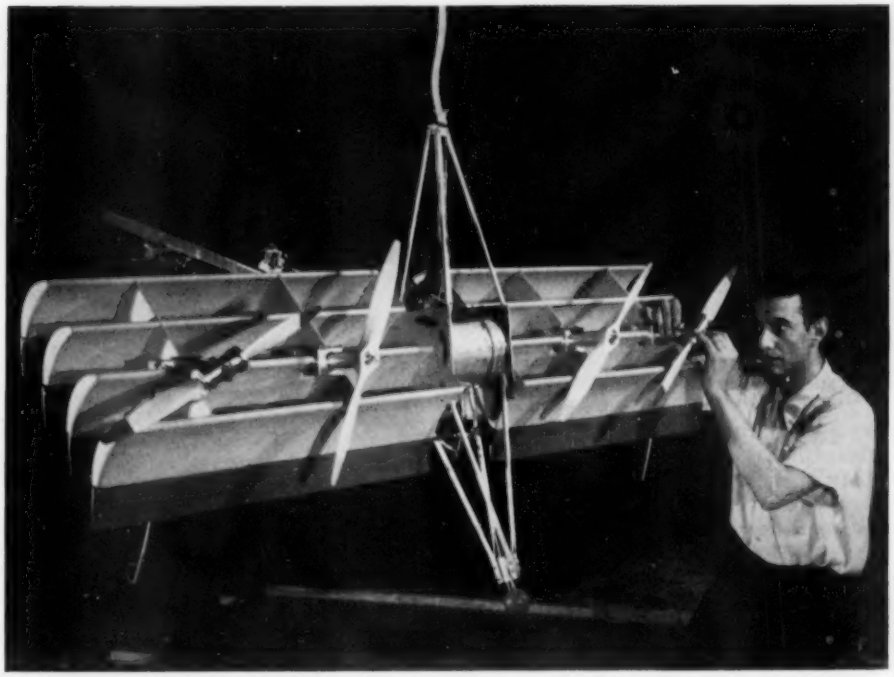

VENETIAN BLIND WING—Close-up view of a vertically-rising airplane model, with a five-foot wing span, shows a design being tested to find an ideal passenger plane of the future.

AERONAUTICS

Planes to Rise Straight Up

To find an airplane that will rise like a helicopter but fly like a plane, aeronautical engineers are testing many designs, including a wing that looks like a Venetian blind.

See Front Cover

➤ TOMORROW'S SUPER-AIRLINER may take off straight up, yet it will not be a helicopter.

The plane will have two wings on each side, one above the other. Just before take-off, the passenger will see the wings curl downward in the rear. The powerful engines will roar, the plane will buck and heave, then slowly lift itself into the sky—straight up.

The passenger will note that he is hovering over the stamp-sized airport, then the wings slowly will straighten out to resemble present day designs. The big plane will begin to move forward, and soon will be thundering through the skies.

Models of the wings, which somewhat resemble Venetian blinds, now are getting workouts at the National Advisory Committee for Aeronautics' stability and control laboratory, Langley Field, Va.

Another version of the same idea would have the airplane perched on its tail while awaiting passengers. When loaded, the plane would climb straight up, level off and fly conventionally. But this idea does not seem as desirable for commercial use as the bending-wing idea.

Other research at Langley Field includes problems of transonic flight—the speed range in which one law of sub-sonic aeronautical design contradicts a supersonic law, both "laws" governing the same thing.

The scientists also are searching for answers to the problems of heat generated by air friction at supersonic speeds. Such heat is great enough to make some metals glow red. It spreads itself unevenly over the plane's surface. This weakens the metal dangerously, limits the plane's top speed and could put the United States at a disadvantage if the enemy finds the answer first.

MIG's Wings Rip Off

Wings are ripping off Russian MIG-15's "every day" in Korea due to a design problem aeronautical scientists at Langley Field are trying to lick.

A National Advisory Committee for Aeronautics research scientist told SCIENCE SERVICE that U. S. Air Force planes run into the same problem. But Air Force fighters

in Korea are hanging together better than the Russian jet.

The problem is wrapped up in what NACA scientists call "pitch-up." This is a force that can jerk control of the zooming jet fighter out of the hands of the pilot as his plane climbs sharply. It usually causes the plane to nose upward at an even sharper angle. The wings become severely overloaded and fail. The plane plunges to its destruction.

Swept-back wings of supersonic planes are particularly vulnerable to the vicious pitch-up condition. Both Soviet and American designers are scratching their heads over the problem.

"Fences" are put on the wings to combat pitch-up; the fences are merely thin bands of metal that divide the wing into sections. They minimize the danger of pitch-up, but do not cut it out completely. NACA scientists are searching for better designs and more "gadgets" like the fences that eventually may relegate this problem to aviation history.

A scale model of the world's fastest airplane, the Douglas D-558-2 Skyrocket, mounted for wind tunnel tests in the supersonic pressure tunnel at Langley Aeronautical Laboratory, is shown on the cover of this week's SCIENCE NEWS LETTER.

Supersonic speeds within the ability of the Skyrocket, which has flown 1,238 miles per hour at high altitude, can be duplicated in this wind tunnel. Seen through an open window, the test section of this wind tunnel is almost four and one-half feet square, and is one of the three largest supersonic wind tunnels in the United States.

To carry on its research program, Langley Laboratory has 20 wind tunnels of various sizes, three of which are for studies in the transonic range. The largest has a test section 16 feet in diameter, thus can accommodate relatively large models with extensive instrumentation.

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MEDICINE

Six Man-Like Women Restored to Femininity

➤ SIX WOMEN who became manlike have been changed back to women again through a simple operation.

Physicians of the Tulane University Medical School, New Orleans, pointed out that in the ovaries of women there exist a few cells like those seen in the male testes. In a few cases, later in life, these cells grow into tumors which actually produce the male sex hormone in large amounts.

But, in six women treated at Tulane, production of this male sex hormone gave them beards, growth of hair on most of the rest of the body, development of male-like muscles of the arms and legs and deepening of the voices.

These tumors were removed. After the operation, the men-women became women again, Dr. William H. Sternberg of Tulane reported.

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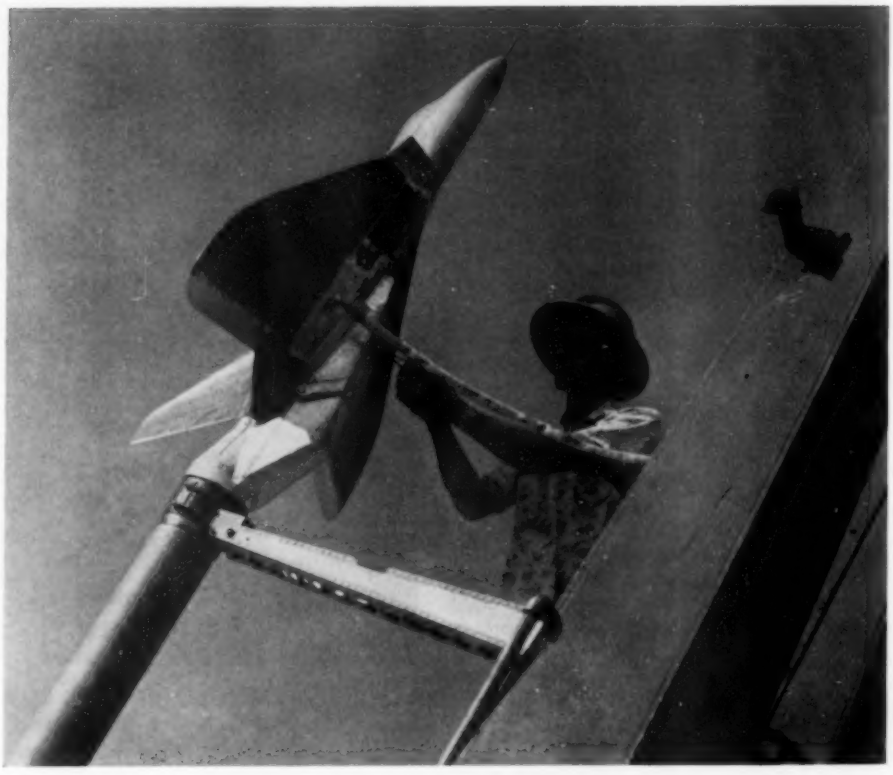

LAUNCHING MODEL—This dynamic scale model of a new jet fighter, the Navy's F4D Skyray, was fired into the sky for a supersonic test flight to investigate drag, stability and control.

PSYCHIATRY

Analyze "Mind Washing"

Acceptance of parents' dictates in childhood conditions persons to surrender to superior power, thus possibly accounting for success of propaganda under pressure.

➤ ANY POW's who accepted Communist propaganda as a result of Soviet "mind washing" techniques were men who, as children, gave up the struggle to be themselves and abandoned themselves to the dictates of father or mother.

Having once been conditioned to surrender, psychologically, to a superior power, they were predisposed to do it again.

This interpretation of why, or on whom, Red "mind washing" succeeds was given by Dr. James Clark Moloney of Birmingham, Mich., at the meeting of the American Psychoanalytic Association in Los Angeles.

Soviet success in extorting "confessions" such as those of Cardinal Mindszenty and Robert Vogeler is based on the same psychological factors.

An interview with Mr. Vogeler, made in October, 1952, by a trained social worker acting for Dr. Moloney, confirmed Dr. Moloney's belief about the basis of the communist interrogation methods.

That Army psychiatrists will be able to unwash or rewash the minds of these men was suggested, though not stated, in Dr. Moloney's report. Presumably this could be done by methods psychoanalysts use in obtaining "positive transference" in their patients.

The social worker who interviewed Mr. Vogeler for Dr. Moloney noted that he "seemed to relate himself easily and directly toward another person and that he displayed considerable relaxation. She detected no lingering nervousness which might have carried over from his traumatic (injurious) experience," Dr. Moloney reported.

"The interview with Robert Vogeler," Dr. Moloney stated, "presents clear evidence of the type of superego structure with which we are concerned."

(The superego is that part of the mind which acts as a monitor, or as some consider it, as the conscience, over thoughts and actions and to some extent feelings.)

"Several points should be emphasized," Dr. Moloney said. "First, Vogeler's father was German, a nationality group which puts great store by authoritarianism, espe-

cially of the father. However benevolent this authoritarianism may be in actual application, it includes a generally clear tendency to defer to the male parent as the final authority in all family matters, particularly in the disciplining of children. The father in this instance was a member of a Christian sect noted for rigidity and rather extreme deference to a still higher authority, God.

"One may suppose that Vogeler's French mother may have been capable of greater flexibility and freer emotional activity than the father, which may well have contributed to her son's generally adequate emotional adjustment. Yet his mother, too, belonged to a highly authoritarian religious group. It is interesting that both parents permitted their son to elect his own religious faith; and interesting that he did not depart far, choosing one also distinguished by clearly defined ritual and routine accession to the higher authority of God, Jesus Christ, and the Holy Ghost.

Reliance Upon Superego

"It is not surprising that Vogeler identified himself with the naval service, again an authoritarian milieu, both in obtaining an education and in pursuing for a time a naval career. The patriotism he developed to a considerable degree is but an extension of the superego involvement which must surely have resulted from the earlier familial and religious atmosphere."

"It is clear," Dr. Moloney said, "that he felt there were certain prescribed ways of life for him and the feeling implied is that at some point in his life he accidentally or unconsciously might have surrendered to self, rather than acceding as usual to authoritarian demands. The statements regarding conviction of support from a higher power than his own self-preservation mechanisms and the resorting to invocation of that support through prayer demonstrate again his habitual reliance upon superego forces, especially in times of stress.

"I feel these statements in no wise differ from what Mr. Vogeler himself believes. He said he had been susceptible to guilt-feelings insinuated by the communists and pointed out that his patriotic and religious orientation encouraged the guilt-feelings. Perhaps most significant is his own expressed recognition of a difference only in degree between himself and Mindszenty."

Sustain Highest Possible Pitch

"Though the interpretations to some extent may be conjectural, such an accusation cannot be made with reference to the methodology of the communists. Vogeler and other sources all show that the communists have employed, as do the Zennists, the technique of inducing exhaustion after a prolonged period of unrelenting application of intellect to a problem. Vogeler was kept at the highest possible pitch through application of stimulants, lights, noise and general badgering until he had reached a state of being completely exhausted, emotionally and physically. Then he was allowed to relax. At this point, and not before, he gave up. While for him an actual theophany (flash of inspiration) did not occur, certainly the equivalent is evident in his memorizing and mouthing specious answers to specious questions. One cannot imagine more that a small portion of his normal intellect and reasoning power remaining at the time of his trial.

Only Real Authority

"By obeying the communists' orders to memorize, recite and sign the confession, Vogeler was merely acceding to the only authority which any longer seemed real to him. The authority of his captors for the moment served as the stern father, God, or military commander. To accede to them under such circumstances was identical with acceding to parent, priest, or other authority in normal life situations. This is not to say that he transferred his allegiance and became imbued with communist philosophy. Instead, he achieved a psychic transfer of the control of his self-system from the authoritarian superego-systems which had formerly governed it to this new power which now prevented his self-determinism.

"Consider Vogeler's situation in the light of what occurred with St. Paul: Saul had previously surrendered his self-system to the authoritarian-system represented by Jehovah and the dogma of Judaism. When his theophany occurred, Saul resolved his inner conflict, not by defeating the authoritarian or superego-system, not by trusting his self-system into control, but by substituting a new superego-system for the old, i.e., Christianity for Judaism.

No Uniformity of Response

"American intelligence officers have marked the amazing willingness of Japanese prisoners in World War II to answer honestly and without hesitation any and all questions put to them by their captors. Some Americans have believed such behavior to be the result of lack of preparation of Japanese soldiers for the eventuality of capture. On the contrary, it is a striking example of the ready accession to the demands of anyone in authority which is inculcated in every Japanese from early infancy onward—yet another example of the St. Paul-Vogeler type of psychic transfer from one superego-figure to another."

"I must, however, emphasize," Dr. Moloney said, "that there is no great uniformity in the response of their (the communists) victims. I postulate that the differences in the length of time it takes for the communists to reduce various victims to the point of confession, as well as the individual's choice of escape from the communist menace before capture, or suicide or escape after capture (or unsuccessful attempts at either) is the result of innate differences in the psychological makeup of the various individuals.

"Jan Masaryk, for example, may have elected suicide because of a well-developed self-system and a clear understanding of reality. He may well have understood that martyrdom resulting from submission to interrogation and imprisonment could have value neither to his countrymen nor to himself. One-time Czech President Benes may have escaped from the range of the communists because he, too, was unwilling to surrender self to authority and because, realistically, he knew that he could best serve his people as a free man rather than as a prisoner of the communists.

"I have a strong feeling that even if Benes and Masaryk had been put through the type of interrogation to which Cardinal Mindszenty submitted, they might never have 'confessed.'"

It seems inescapable," Dr. Moloney concluded, "that groups of individuals predisposed to develop psychoneuroses from the traumata (emotional as well as bodily injuries) of war, especially enemy propaganda, would to a great extent be the same groups predisposed to react positively in response to the techniques employed by the communists to obtain false confessions."

Science News Letter, May 16, 1953

GENERAL SCIENCE

Award Top Prizes At Fourth Science Fair

▶ THE FOUR first prizes in the Fourth National Science Fair were awarded to: Doris Jean Hermes, 17-year-old student of Martinsville (Va.) High School; John D. Rather, Jr., 15, The McCallie School, Chattanooga, Tenn.; Patricia Ann Kirchoffner, 17, Devils Lake (N. D.) Central High School, and David Michael Young, 17, P. A. Allen High School, Bluffton, Ind.

Each first prize consisted of $125 in scientific equipment. The Fair was held May 7-9 at the American Museum of Atomic Energy, Oak Ridge, Tenn., with 71 high school students competing for top honors.

Competition was so intense and close that six instead of the announced four second prizes, each of $75 of scientific equipment, were awarded. These went to: Carolyn Evans, 17, Martinsville (Va.) High School; Larry Collins, 17, Classen Senior High School, Oklahoma City, Okla.; Albert C. Petersen, Jr., 17, Farmington (Conn.) High School; Stewart Tanner Traill, 17. Fountain Hill High School, Bethlehem, Pa.; Peggy Lenderking, 16, Martinsville (Va.) High School, and Travis Elton Stubblefield, 17, Denton (Texas) Senior High School.

Four third prizes, each consisting of $50 in scientific equipment, were awarded to: Claire G. Vilandre, 18, Notre Dame High School, Central Falls, R. I.; Jasper Ivan Rhode, 18, Jefferson High School, Lafayette, Ind.; Martial Leon Thiebaux, Jr., 16, Whittier (Calif.) High School, and Douglass Gray Saunders, 15, Oak Ridge (Tenn.) High School.

The National Science Fair is conducted by Science Clubs of America, a SCIENCE SERVICE activity, with newspapers cooperating.

Science News Letter, May 16, 1953

NUTRITION

Provide Food for Morale in Disasters

➤ PLANS FOR disaster feeding should be made with an eye to psychology as well as nutrition. The importance of this is stressed by Dr. James M. Hundley of the National Institutes of Health, Bethesda, Md., in the *Journal of the American Medical Association* (April 18).

If people have water to drink, they can survive for many days without food, so a high priority must be given to an emergency supply of safe drinking water.

Next on Dr. Hundley's list comes hot coffee, and it must be hot, for grownups, and milk for babies and children. This is primarily for the morale effect. This fills the first need in the hours immediately after the disaster. The hot coffee provides needed stimulation and the milk, besides being good for the children and babies, calms their parents' anxiety.

Provision of these two items shortly after a disaster is also helpful because it shows that "the community is still functioning, that others are not fleeing in panic and that doomsday has not yet arrived," Dr. Hundley declares.

Vitamins and a balanced diet can be safely forgotten during the first days after a disaster. It is unlikely that any one will be dependent on emergency feeding for much more than a week. Well nourished persons, even those on the edge of undernourishment before the disaster, will not develop deficiency diseases for lack of this or that vitamin or food essential within a week or so.

Food, therefore, should be planned primarily to relieve hunger and sustain morale. This, however, does not mean that any old food will do. The foods should be familiar, well liked foods that everyone will eat.

People who have just been through a disaster are much more likely to refuse unfamiliar or unliked foods than they would when not in such a state of stress.

Science News Letter, May 16, 1953

TECHNOLOGY

Slippery New Plastic Simplifies Cookie-Making

➤ A SLIPPERY new plastic with a tongue-twisting name, polytetrafluoroethylene, is helping cookie makers to satisfy the appetites of a hungry public.

L. W. Cornell, Minnesota Mining and Manufacturing Company development engineer, told the American Society of Mechanical Engineers meeting in Columbus, Ohio, that Teflon, as his company calls it, is so slick that dough does not stick to it.

Bakers have used it to coat their cookie trays. The trays carry a series of depressions into which dough is rolled to shape the cookie. The plastic prevents dough from sticking to the pan and also cuts cookie damage.

The plastic has other unique properties which suit it for use in jet aircraft, guided missiles, aircraft motors and electrical insulation. It works well at 500 degrees Fahrenheit and can stand intermittent temperatures as high as 600 degrees. It retains its flexibility at temperatures as low as 100 degrees below zero. Weathering has no effect upon it.

It is as inert chemically as glass. This means that it can be used to line vats containing hot nitric and sulfuric acid.

Although its price tag sports a large figure, it has economically replaced asbestos, specialty rubbers, bronze and cast iron in some applications.

Science News Letter, May 16, 1953

AGRICULTURE

Grain Planting Acreage Upped in Soviet Union

➤ THE SOVIET Union reports 8,000,000 more acres of wheat, barley and oats were planted there this spring than in the spring of 1952, said Dr. Lazar Volin, Russian expert with the U. S. Department of Agriculture.

The Russian report did not give figures for the total spring planting of these small grains, however, Dr. Volin said.

Total acreage in the USSR devoted to wheat, barley and oats in 1952 throughout the entire year has been reported by the Soviets—385,000,000 acres. This shows an increase over the pre-war figure of 378,000,000 acres for small grains, Dr. Volin said.

Science News Letter, May 16, 1953

INVENTION

Tires Pick Up Fewer Stones With New Groove

➤ STONES IN the grooves of your automobile tires will be much less of a problem if the kind of grooves recently patented are adopted.

The grooves, straight ones which go all around the circumference of the tire, are cut at an angle. Also on one wall of the groove there is a bulge and opposite the bulge an indentation. Inventors are William F. R. Briscoe and Verne H. Berry, Detroit, and they have assigned their patent, number 2,637,362, to the United States Rubber Company.

When the tread is pressed into contact with the road, the sides of the grooves nearest the outside of the tire are deflected inward. Thus the width of the groove is made much less, and thus only the smaller stones can get into the groove. Once the groove leaves contact with the road, it widens again. Then the tire loses its grip on the stone.

The inventors say that tires with these grooves were observed to have approximately 25 times as much resistance to stone pick-up as tires with the previously best-known stone-ejecting grooves. This was after the tires were used on a test road.

Science News Letter, May 16, 1953

IN SCIEN

GERONTOLOGY

Crowded Homes Send Oldsters to Hospitals

➤ APARTMENT LIFE may be hard on old people, causing them to break mentally to such an extent that they become patients in mental hospitals.

A suggestion that this might be the case appeared in a study reported by Dr. Ernest M. Gruenberg of the New York State Mental Health Commission at the meeting of the American Psychiatric Association in Los Angeles.

Or, on the other hand, it may be that old people who are senile and mentally disturbed because of hardening of the brain's arteries cannot be cared for in small, crowded apartments.

The answer cannot be given without further study, but in Syracuse, N. Y., there is an area with high rates of first admissions of older people to mental hospitals, and this area coincides with the area of greatest crowding in multiple family dwellings.

The area does not coincide with the area of lowest socio-economic status but rather with that of low and medium rentals. Syracuse does not have very crowded, very low rental areas nor very crowded, high rental areas. Studies in other cities where these conditions do exist may show more about the relation of crowding to high rates of first hospital admissions of mentally sick old people.

Science News Letter, May 16, 1953

OPHTHALMOLOGY

Score Most Blindness As Inexcusable

➤ LITTLE OR no excuse remains for blindness of many kinds anywhere in the world, Dr. Derrick Vail, head of the department of ophthalmology, Northwestern University Medical School, Chicago, told the World Medical Association at its first Western Hemisphere conference in Richmond, Va. A new cause of blindness, retrolental fibroplasia, on the other hand, still baffles scientists.

"Blindness due to trachoma, ophthalmia neonatorum, most other ocular infections, cataract, detached retina, nutritional diseases and even glaucoma, can be avoided," he said, "if only the facts that are now known about the treatment and care of those conditions can be put into effect."

Premature babies, whose lives are now saved by improved obstetrical techniques, are now, however, developing a new form of blindness, "retrolental fibroplasia," Dr. Vail said. This desease was unknown before 1942.

Science News Letter, May 16, 1953

ENCE FIELDS

BIOCHEMISTRY

Arthritics Make Abnormal Body Chemical

➤ DISCOVERY OF a body chemical that develops in patients with arthritis was announced by Dr. C. P. Rhoads. director of Sloan-Kettering Institute for Cancer Research, New York, at the meeting of the Association of American Physicians in Atlantic City, N. J.

The chemical is an "abnormal hormone" produced by the adrenal glands which also produce cortisone, famous for the relief it gives to arthritis patients. The abnormal compound is called 17a-hydroxypregnanolone.

This abnormal hormone was found in the urine of seven arthritis patients but not in the urine of 29 normal persons. With production of this hormone goes decreased production of normal hormones such as cortisone. Giving cortisone causes a drop in the amount of the abnormal hormone.

The discovery was made in research by the late Dr. Konrad Dobriner and Drs. T. H. Kritchevsky, Attallah Kappas and T. P. Gallagher, all of Sloan-Kettering Institute.

Science News Letter, May 16, 1953

PHYSIOLOGY

Body Thrifty With Muscular Energy

➤ TONIC CONTRACTION is not the normal state of healthy postural muscles, says Drs. H. J. Ralston and Benjamin Libet of the University of California Biomechanics Group in San Francisco.

Electromyographic research of recent years casts doubt on the common belief that "tone" or "tonus" in normal skeletel muscles means that they are in a state of partial contraction from continued nervous bombardment. Continuous activity of these muscles was supposed necessary to keep our bodies upright against gravity.

Electrodes inserted into the postural muscles of persons who are sitting or even standing in relaxed positions have shown that these muscles are electrically silent most of the time. Since the feeblest contraction of voluntary muscle is easily detected electrically, it must be concluded that our skeletal muscles are usually at rest when we are. A "springy," healthy skeletal muscle, that is said by the doctor to be "in good tone," is not actively contracted.

Then how do we maintain an easy upright posture? Largely through balancing on our bony skeletons and through the natural elasticity of our tissues. The body makes full use of the passive stretch of ligaments and muscles before the muscles will actively contract to keep it from swaying and falling. When the postural muscles do come into play, it is only briefly, to put us in a new position of balance. These frequent shifts of position can be observed in anyone who is sitting or standing at rest.

For investigators believing the postural muscles to be continuously active, the fact that they did not easily fatigue was a perplexing problem that called forth elaborate and ingenious explanations. The problem of not fatiguing is happily simplified if there is no prolonged contraction of these muscles.

This view that the body is more parsimonious of muscular energy than previously supposed appears in the *American Journal of Physical Medicine* (April).

Science News Letter, May 16, 1953

INVENTION

Patent Method of Scrambling TV Pictures

➤ A METHOD of sending scrambled TV pictures during wartime received patent No. 2,636,936. Invented by Dr. Alfred N. Goldsmith, chairman of the board of technical advisers for the Radio Corporation of America, New York, the system presents a jumble of light on video screens unless the receiver is equipped with an oscillator to straighten out the picture. The method can be used in pay-as-you-see-it TV areas to prevent non-subscribers from watching the program without cost. Dr. Goldsmith assigned his patent to RCA.

RCA also was assigned patent No. 2,636,671 covering a radio and TV audience-counting system invented by Robert Evart Shelby of Teaneck, N. J. The system reveals how many radio or TV sets are tuned to a given station. It eliminates the need for surveying the audience by telephone or for house-to-house visits.

Science News Letter, May 16, 1953

TECHNOLOGY

Underground Water Used in Air Conditioning

➤ RADIANT ENERGY and subterranean water have been harnessed to operate a unique all-year air conditioning system built into a $7,000,000 general hospital being completed in Glen Oaks, N. Y.

During summer operation the 500-bed Long Island Jewish Hospital will be cooled by circulation of underground water at a natural temperature of 50 degrees. This will be done through ceiling and wall coils. In winter the same coils will be utilized to circulate heated water, warming the rooms through radiation.

An elaborate control system, developed by Minneapolis-Honeywell engineers and utilizing some 300 thermostats, sensitively regulates the radiant panel heating, or the cooling, in each of the hospital's rooms and work areas.

Science News Letter, May 16, 1953

PSYCHOLOGY

Authoritarian Tendency Less With Extreme Drive

➤ PERSONS WHO are notably high or low in their need for achievement are less likely to be authoritarian than those whose need for achievement is of moderate intensity.

This was found by Dr. David C. McClelland and his colleagues, Henry N. Ricciuti and Edward O. Swanson, at Wesleyan University in a study looking for ways to predict degree of success in school.

They developed a method for analyzing stories for particular kinds of imagery that shawed an achievement drive. The stories were told in tests designed to show how clearly new ideas and knowledge are interpreted.

Persons who are high in need for achievement as determined by their methods show much greater improvement in performances of complex tasks in the course of a short learning period than do those who are low in achievement need. They also are more resistant to social pressures designed to instill them with erroneous suggestions.

Science News Letter, May 16, 1953

PSYCHIATRY

Nervous System Makes People Argue Both Sides

➤ IT IS not a sense of fair play but the way the nervous system reacts to emotions that makes a person present both sides of an argument when he feels strongly on the subject.

This explanation was given by Dr. George F. Sutherland of the University of Maryland School of Medicine, Baltimore, at the meeting of the American Psychiatric Association in Los Angeles.

The same mechanism explains why a person feels better after he "blows his top," Dr. Sutherland said.

The effect of an emotional stimulus is thrown off through a series of rhythmic swings that get weaker and shorter like a pendulum slowing down, according to Dr. Sutherland's theory. As a further example he said:

"In a speech, the politician usually begins by denouncing the opposition. After a time he will continue with an apparent change of heart and even on occasion make some mildly complimentary remark with regard to his opponent.

"This phase, however, is short-lived and seldom as enthusiastic as his original contention to which he soon returns. The second attack is never as vehement or lengthy as the first.

"This alternate talking 'for' and 'against' continues until a point is reached where he has nothing further to say on the subject. He then consults his written or mental notes and starts in afresh, repeating the same maneuver on the next topic."

Science News Letter, May 16, 1953

ASTRONOMY

Putting the Moon to Work

Moon helps in calculating more accurately great distances here on earth. Shows speed at which earth turns. Aids in exploring outer layers of the sun.

By MARTHA G. MORROW

➤ EVEN IF man never gets to the moon, the moon is much more useful than just to furnish light for lovers and create the tides of the sea.

Man is just beginning to discover its value in:

Calculating more accurately the size of the earth, and great distances across oceans and deserts.

Determining more exactly the passage of time, and studying the speed at which the earth is turning.

The moon by itself is of little use in telling us about the universe beyond. But when it comes between the earth and the sun or a distant star, it can reveal much. The moon helps us explore the outer layers of the sun during a total solar eclipse and has shown much about its composition. Within recent years astronomers and other scientists have used the moon to estimate the size of certain stars, and to discover stars that are really not just one but two quite close together.

The moon, by way of a solar eclipse, helped prove that light from the more distant stars can be bent by gravity, thus putting on a firmer basis Einstein's theory of relativity. It has also shown itself useful in getting radio messages through during a blackout. Even when hidden by clouds, the moon can be depended upon to bounce shortwave radio signals back to receivers here on earth located hundreds of miles from the sending station.

Use Moon as Telescope

Man may never succeed in actually placing a telescope on the moon, far above the earth's interfering atmosphere, but the moon itself can be employed as a telescope. The moon's edge, serving much the same purpose as a simple pinhole camera, for certain investigations really furnishes us an 800-inch telescope with a focal length of 200,000 miles. Astronomers are just beginning to learn how to put it into service.

Watched by man for thousands of years, the moon is still an object of detailed study. Its movement around the earth, for instance, is quite irregular. If it is to help us in surveying great distances here on earth over sea or desert, and in clocking the earth's rotation, its inconstant motion must be predicted more accurately.

The outline of the moon, which on clear nights you often see against a background of dark blue sky and pinpoint stars, is constantly changing. Thus the different areas of the moon seen in profile must be mapped in greater detail.

The moon takes as long to travel around the earth, on the average, as it does to turn around its own axis. Thus the same side of the moon always faces the earth. But the moon's distance in its eccentric orbit varies whereas its axial rotation does not, so that sometimes we can peek a bit farther around one edge, sometimes we see a little more around the other.

At one time or another observers here on earth have seen nearly 60% of the moon's total surface. It is this marginal zone of the moon, seen one time or another at its edge and comprising approximately one fifth of its visible portion, that is being studied by C. B. Watts of the U. S. Naval Observatory, Washington.

Large scale profiles of the moon are being constructed from photographs taken at the U. S. Naval Observatory, the Yale University Southern Station at Johannesburg, South Africa, and at the Lowell Observatory, Flagstaff, Ariz. Measurements of the side best seen in outline are made by automatic apparatus utilizing a microscope equipped with light-sensitive cells.

Maps showing these variations in the moon's edge, which now are being plotted more carefully than has previously been thought necessary, are expected to be ready for publication in 1956. As soon as available, they will probably be used in surveying large areas here on earth. They are also expected to prove of great value in helping to improve our time determinations by detecting slight changes in the earth's rotation.

Photograph Moon With Stars

Soon it will be possible to photograph the exact position of the moon at any instant against a background of stars. A new type of camera, which was developed by Dr. William Markowitz of the U. S. Naval Observatory, will enable astronomers to photograph, without blurring, the moon as it races across the sky along with the fainter, more stationary stars.

The new device guides on both the moon and the background stars during the 15

MAPPING MOON—Through use of special moon photographs and machines, the mountains and the valleys of the moon are transferred to strips of paper as a wavy line. Here astronomer Alvah D. Allen and mathematician Becky Lichtenstein of the U. S. Naval Observatory examine some of the results of the work done on the six miles of paper strips so far completed.

seconds or so needed for the faint stars to show up on the photographic plate. The key to its success is a dense, tilting filter.

This dark filter cuts out most of the moon's bright light so only 1/1000 of the light gets through to the plate. Thus the stars surrounding the moon show up clearly. It is the regular speed at which the motor-driven filter is turned that makes the moon apparently "stand still" long enough to show up in detail on the time exposure.

An electronic "brain" with its great ability for handling involved calculations now is fast at work on an astronomical timetable for the moon, plotting its erratic motions.

Thanks to this electronic calculating machine, future positions of the moon among the stars are being figured with greater accuracy than has ever before been possible. The work is being done under the supervision of Dr. W. J. Eckert of the Watson Scientific Computing Laboratory of the International Business Machines Corp., and G. M. Clemence, director of the U. S. Nautical Almanac Office of the U. S. Naval Observatory. Showing the positions of the moon at half-day intervals from 1952 to 1971, this lunar ephemeris will probably be ready during 1953.

Electronic "Brains" Used

Several decades ago such highly accurate positions for the moon were not considered essential, but today the exact position of the moon is needed more and more in astronomy and surveying. Working from the original formulas, the electronic "brain" is producing highly reliable figures which will enable time experts to use the moon as well as the sun and stars in estimating the passage of time.

Not just the moon, but also the earth rotates at a slightly irregular speed. This shows up in the apparent position of the moon as seen from the earth. When more accurate tables for the moon's position are available, it will be possible to use the moon as a clock to show up irregularities in the speed at which the earth spins.

Surveyors have found the moon helpful in estimating great distances here on earth. They have found it of value during a total or partial eclipse for accurate measures of small angles; now they are discovering how to utilize it on those more frequent occasions when the moon comes between the earth and a distant star, temporarily cutting off the star's light.

Promising Survey Method

The shadow of the moon cast by a star cannot be seen, but the instant it passes overhead can be recorded with a photoelectric device. This cutting-off of the star's light occurs suddenly, thus its appearance can be timed most accurately.

When two observers at different positions on the earth time the instant the shadow of a particular feature on the moon's edge passes over their telescope, the length of the path followed by the shadow of this feature of the moon is readily calculated. Thus report J. A. O'Keefe, Miss Pamelia Anderson, Donald D. Mears and others of the Army Map Service of the Corps of Engineers.

Within the past few years, teams of photoelectric observers and surveyors of the Army Map Service have timed the passage of the moon's shadow from one location to another. On each occasion the shadow cast by the same star was clocked on the same night by at least two observers. This work indicates the moon's shadow is a promising means of surveying great earth distances.

As man studies the moon and learns more about its eccentricities, he will find that it can reveal much about the sun and stars beyond, as well as the earth.

Science News Letter, May 16, 1953

Encyclopedia of

ABERRATIONS

A PSYCHIATRIC HANDBOOK

Edited by EDWARD PODOLSKY, M.D.
State University of New York Medical College

With a Foreword by ALEXANDRA ADLER, M.D.
New York University College of Medicine

This is the first systematic exposition of human aberrational behavior. In this volume over fifty eminent psychologists and psychiatrists discuss all types of aberrations, with particular emphasis on their psychodynamics. The material is arranged in alphabetical sequence for easy reference.

SOME OF THE ENTRIES:

Abasia
Ablutomania
Abulia
Acalculia
Acataphasia
Aggression
Alcoholism
Amnesia
Anal eroticism
Anancasm
Anti-Semitic attitudes
Anxiety, dental
Aphasia and linguistics
Autism, infantile
Auto-punishment
Benzedrine, addiction
Bestiality
Body image disturbances
Boredom
Brontophobia
Cacodaemonomania
Chloral delirium
Choreomania
Clairvoyance
Claustrophobia
Cocaine, addiction
Crime, neurotic
Criminality
Depression
Devil worship
Dream murders
Dysprosody
Ecouteur
Ecstasy, artificial
Erotographomania
Exhibitionism
Family tension
Fellatio
Fetishism
Folie a deux
Frigidity
Frottage
Gambling
Gammacism
Gelasmus
Gustatory sweating
Gynephobia
Hair-plucking
Hallucinations
Haptodysphoria
Hashish, addition
Head banging
Heroin, addiction
Heteralalia
Homosexuality
Hysteria
Iconolagny
Illusions
Inferiority feelings
Intellectual malfunctioning
Kainotophobia
Kakorrhaphiophobia
Kleptomania
Language frustration
Laughter, fits of
Lesbianism
Logorrhea
Lying
Malingering
Masochism
Menstrual anomalies
Mescaline intoxication
Murderer, mind of
Mutism
Mysophobia
Narcolepsy
Necrophilia
Negativism
Nudism
Nymphomania
Ochlophobia
Onanism
Opium, addiction
Pavor nocturnus
Pessimism
Pethidine, addiction
Phobias
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Books of the Week

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ADJUSTMENT TO PHYSICAL HANDICAP AND ILLNESS: A Survey of the Social Psychology of Physique and Disability—R. G. Barker, B. A. Wright, L. Meyerson and M. R. Gonick—*Social Science Research Council*, 2nd ed., 440 p., paper, $2.00. Defines this field of social psychology and evaluates present-day knowledge.

AL ALLIGATOR—R. W. Eschmeyer—*Fisherman Press*, 49 p., illus., paper 50 cents, cloth $1.00. The story of an alligator and the establishment of the Okefenokee National Wildlife Refuge. For children.

THE AMERICANA ANNUAL, 1953: An Encyclopedia of the Events of 1952—Lavinia P. Dudley and John J. Smith—*Americana Corp.*, 824 p., illus., $10.00. Covers the important developments of 1952 in all major fields of endeavor.

ANCIENT EGYPT — J. E. Manchip White — *Crowell*, 217 p., illus., $3.75. Surveys the history of Egypt from earliest times to the Ptolemies, and describes the life and society of the different classes.

CLINICAL PERIODONTOLOGY: The Periodontium in Health and Disease—Irving Glickman—*Saunders*, 1019 p., illus., $15.00. Recognition, diagnosis and treatment of periodontal disease in the practice of general dentistry.

COLLECTED WORKS OF BERNHARD RIEMANN—Heinrich Weber, Ed.—*Dover*, 2nd ed., 664 p., paper $2.55, cloth $4.95. The complete German text of the 1892 edition and the 1902 supplement of the papers of this great German mathematician.

THE COMPLETE BOOK OF THE GLADIOLUS—Lee M. Fairchild—*Farrar, Straus*, 243 p., illus., $4.00. Information on all phases of growing and arranging gladiolus.

DERMATOLOGY IN GENERAL PRACTICE—Jacob H. Swartz—*Williams and Wilkins*, 581 p., illus., $11.00. Clinical picture, differential diagnosis and specific treatment of all the common skin diseases.

FLOWERS OF THE SOUTH: Native and Exotic—Wilhelmina F. Greene and Hugo L. Blomquist—*University of North Carolina Press*, 208 p., illus., $5.00. Contains more that 500 flowers described and pictured in pen and ink drawings as well as 55 color illustrations.

HEART AND CIRCULATION DIAGNOSIS AND TREATMENT — Meyer Sclar—*Froben*, 357 p., illus., $7.50. Covers the commonly found cardiac conditions and their management.

A HISTORY OF THE TEXAS MEDICAL ASSOCIATION, 1853-1953—Pat Ireland Nixon—*University of Texas Press*, 476 p., illus., $6.00. A narrative description of the Texas Medical Association, its ideals, progress, failures and successes.

IMPROVEMENT OF OIL GAS SUBSTITUTABILITY FOR NATURAL GAS BY PRESSURE GASIFICATION—D. L. Nicol, J. J. Guyer, E. F. Searight and H. R. Linden—*Institute of Gas Technology*, 36 p., illus., paper, $2.50. Results of one phase of studies to produce high-Btu oil gases that can be substituted for a natural gas in meeting base or peak loads.

THE INTERPERSONAL THEORY OF PSYCHIATRY —Harry S. Sullivan, edited by Helen S. Perry and Mary L. Gawel—*Norton*, 393 p., $5.00. Unpublished lectures which express Sullivan's later point of view that good relations between individuals are essential to mental health.

LOST TRAILS, LOST CITIES — Col. P. H. Fawcett, edited by Brian Fawcett—*Funk & Wagnalls*, 332 p., illus., $5.00. The first-hand account of 7 explorations into the heart of the Amazon Basin by the explorer who vanished into the jungle wilderness on the eighth expedition.

MAC MALLARD—R. W. Eschmeyer — *Fisherman Press*, 50 p., illus., paper 50 cents, cloth $1.00. Tells children how our game animals are managed for a better hunting future.

MAN AND HIS PHYSICAL UNIVERSE: An Integrated Course in Physical Science — Richard Wistar—*Wiley*, 488 p., illus., $4.75. A unified treatment of scientific principles in the framework of everyday experience.

MATHEMATICAL RECREATIONS—Maurice Kraitchik—*Dover*, 2nd ed. rev., 330 p., illus., paper $1.60, cloth $3.00. Contains more than 250 problems involving the guessing of unknown numbers, examples of cryptoarithmetic, probabilities, etc. For entertainment and instruction.

MATHEMATICS FOR THE CONSUMER—Francis G. Lankford, Jr., Raleigh Schorling, and John R. Clark—*World Book*, rev. ed., 438 p., illus., $2.76. Text in business arithmetic for the high school student taking the non-academic course.

PLASTIC MOUNTS FOR SCIENCE SPECIMENS—Hiram M. Hunt—*Curriculum Bulletin, University of Oregon*, No. 113, 16 p., illus., paper, 25 cents. Gives information on imbedding science specimens in casting plastics.

A REGIONAL GEOGRAPHY FOR ADVANCED AND SCHOLARSHIP COURSES: Part I, The Americas—L. Dudley Stamp—*Longmans, Green* 6th ed., 269 p., illus., $3.50. Intended as an introductory college course in the geography of the Western Hemisphere.

A REGIONAL GEOGRAPHY FOR ADVANCED AND SCHOLARSHIP COURSES: Part II, Africa—Stanley H. Beaver and L. Dudley Stamp—*Longmans, Green*, 3rd ed. rev., 271 p., illus., $3.50. Revised to include boundary changes, latest statistics, etc.

A REGIONAL GEOGRAPHY FOR ADVANCED AND SCHOLARSHIP COURSES: Part IV, Asia—L. Dudley Stamp—*Longmans, Green*, 11th ed., 204 p., illus., $2.75. Brought up-to-date by using recent trade diagrams, etc.

SKY LABORATORIES—Eva L. Gordon—*N. Y. State College of Agriculture, Cornell University*, Cornell Rural School Leaflet, Vol. 46, No. 3, 32 p., illus., paper, 10 cents. An introduction to astronomy for children.

WASHING OUR WATER: Your Job and Mine—Helen B. Woodward—*Public Affairs Committee*, Pamphlet No. 193, 28 p., illus., paper, 25 cents. Points out the necessity of community action to end water pollution.

WAVE PROPAGATION IN PERIODIC STRUCTURES: Electric Filters and Crystal Lattices — Leon Brillouin—*Dover*, 2nd ed., 255 p., paper $1.75, cloth $3.50. Problems extending from electrical engineering to electromagnetism and wave mechanics of the spinning electron.

WEATHER AND THE WEATHERMAN: A Resource Unit for Intermediate and Upper Grades — Lowell R. Bee—*Curriculum Bulletin, University of Oregon*, Vol. IX No. 125, 23 p., paper, 40 cents. A guide to the study of weather, with simple experiments.

WILLIE WHITETAIL—R. W. Eschmeyer—*Fisherman Press*, 49 p., illus., paper 50 cents, cloth $1.00. For children, this emphasizes the need for controlled hunting to insure enough food for the surviving animals.

WOODY WOODCOCK—R. W. Eschmeyer—*Fisherman Press*, 50 p., illus., paper 50 cents, cloth $1.00. For children, this is the true-to-life story of a woodcock with emphasis on wildlife conservation.

Science News Letter, May 16, 1953

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PSYCHOLOGY

E.M.Q. Shows Women More Mature Than Men

► WOMEN ARE more emotionally mature than men, a Canadian psychiatrist told the American Psychiatric Association meeting in Los Angeles.

The psychiatrist is Dr. John Lovett Doust of the University of Toronto and the Toronto Psychiatric Hospital. He has worked out a questionnaire of 99 items for measuring the E.M.Q., or emotional maturity quotient.

Science News Letter, May 16, 1953

PSYCHIATRY

Handle N. P.'s Firmly

➤ KOREAN SOLDIERS who try to get away from the fighting because they are "too nervous for combat" later do just as well in combat as those who never complain of nervousness.

This was reported to the American Psychiatric Association meeting in Los Angeles by Dr. Robert M. Edwards of Winter Veterans Hospital, Topeka, Kans., and Col. Donald B. Peterson, Army psychiatrist.

Our country, hard-pressed for combat men, has had to find ways to cut down on unnecessary losses, they told the meeting. The psychiatrist has helped by taking a firm attitude toward upset and frightened soldiers. One of the chief jobs of the division psychiatrist is to support other combat physicians in keeping soldiers in the field.

"In combat," the psychiatrists explained, "the psychiatrist can't delve too deeply into a patient's personality problems. If the soldier does his real job, which is to fight as well as he can, he will meet later problems better, too."

Psychiatric screening at the induction station is a "myth," except for the rejection of the obviously unfit, Dr. Ivan C. Berlien of Detroit told the meeting.

Dr. Berlien compared the psychiatric rejection rate at various well-staffed and under-staffed induction stations with later discharges for neuropsychiatric reasons. At stations where screening was strict, he found, the discharge rate was disproportionately high. It was not proportionately higher where the screening was lax.

"In other words," Dr. Berlien told the meeting, "there is a terrific loss of manpower for the sake of excluding a few men who will become psychiatric casualties."

Science News Letter, May 16, 1953

PSYCHIATRY

Witness Fitness Test

➤ COURTS SHOULD call on psychiatrists to appraise witnesses at a trial as well as the sanity of the defendant or the damage to the feelings of a claimant, Dr. Henry A. Davidson, lecturer in legal medicine at the Medical College of Virginia, Richmond, declared at the meeting of the American Psychiatric Association in Los Angeles.

At present, he said, "a pathological liar, a hysterical girl, a man whose memory plays tricks on him or who confuses fact with fantasy, and even a victim of a persecutory delusion may all parade to the witness stand."

Unless discredited by some legal trick, the testimony of such persons may be given full weight by a jury unfamiliar with mental sickness. Gauging their credibility at present seems to be largely a matter of "the judge's intuition and the juror's hunch."

A psychiatrist can usually determine whether and to what extent a witness has the four traits necessary to accurate testimony: ability to observe intelligently, to remember clearly, to speak coherently, to be free of emotional drive to distort the truth.

"Most witnesses are psychiatrically normal," Dr. Davidson said. "But there are enough psychopaths, hysterics, alcoholics, schizophrenics, maniacs, neurotics, paranoics and mental defectives in the world to constitute a large pool of potential witnesses. Since many such people are peculiarly litiginous (fond of law suits) they may well be over represented among eager witnesses.

"Considering how vital oral testimony is, it is astonishing," Dr. Davidson declared, "that so much justice is dispensed on the basis of testimony of persons whose emotional and intellectual capacity has not been determined."

Science News Letter, May 16, 1953

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MEDICINE

Living Cells Aid Anti-Allergy Fight

➤ TO AID in the fight against hayfever and other allergies, living cells are taken from the lining of human noses and grown in small covered glass dishes.

Effects on these cells of pollens and other allergy causing substances, and of antihistamines, adrenalin and antibodies in helping the cells fight the allergy causers can be studied with this set-up, Dr. C. M. Pomerat of the University of Texas, Medical Branch, Galveston, has found.

Science News Letter, May 16, 1953

● RADIO

Saturday, May 23, 1953, 3:15-3:30 p.m. EDST

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Charles N. Kimball, president of the Midwest Research Institute, Kansas City, Mo., discusses "How Research Institutes Serve Industry."

MEDICINE

New Drug Helps Some Palsy Victims

➤ A NEW drug for treatment of Parkinson's disease, known also as shaking palsy and paralysis agitans, has been on trial at the Mayo Clinic, Rochester, Minn., for the past two years.

About three-fourths of the 102 patients who have gotten it for three months to two years felt that it was better than anything they had previously used and these 75 showed objective evidence of improvement.

The drug is called compound 08958 by its manufacturers, Eli Lilly and Company. Chemically it is 1-phenyl-1-cyclopentyl-3-piperdino-1-propanol hydrochloride. It is related to another of the newer drugs for Parkinson's disease, artane, and is about as effective.

It seems to be of most benefit for patients suffering from oculogyric crisis, in which the eyeballs become fixed in one position for minutes or hours.

Compound 08958, however, has in no instance "altered the progress of the illness or given more than partial relief of symptoms," Dr. Donald W. Mulder declared in reporting the study of it at a staff meeting.

Science News Letter, May 16, 1953

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NUTRITION

Hold the Leavening In Making Corn Bread

➤ GO EASY on the leavening when you are making corn meal dishes, such as corn bread, spoon bread and pone. Too many cooks use too much baking powder and soda in these dishes, scientists at the Texas Experiment Station found in a recent study.

Too much of these leavening agents destroys the thiamine, or vitamin B-1, in the baked dishes. Besides that, too much soda or baking powder spoils the flavor of corn bread and spoon bread.

The Texas station scientists advise using no more than one and one-half teaspoons of baking powder to two cups of cereal (meal and flour mixed), and using no more than one-half teaspoon of soda to one and one-half cups of sour milk. That many cooks overdo these leavenings is shown by 75 corn bread recipes collected from Texas homes. Nearly half used so much leavening that considerable thiamine would be destroyed in baking, and a third called for enough to destroy all the added thiamine.

Short cooking also helps save this vitamin. Mush and grits cooked 30 minutes or less are appetizing, hold all three important B-vitamins, and are stiff enough when cold to slice for frying. Popular as fried cooked grits and mush are, frying is added cooking, thus causes some further loss of thiamine, worth consideration if the diet is low in this vitamin.

Use of enriched corn meal and grits is advised, although to get the full benefit from enrichment, the cook must be careful not to destroy the added vitamins. Care in cooking corn meal dishes is particularly important in Texas and the South because corn meal is used in such large quantities, especially by rural families.

A survey showed that in farm homes one and one-half pounds of corn meal a person a week was used on the average. For each one and one-half pounds of flour, farm families used at least one pound of corn meal.

Science News Letter, May 16, 1953

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ENTOMOLOGY

NATURE RAMBLINGS

Domesticated Flies

➤ FOR CENTURIES, the honeybee was the only insect that could be counted among man's domestic animals.

To be sure, the bee was somewhat less domestic even than the goat: it would consent to live in quarters provided by man, and would yield up part of its product to him under rather drastic persuasion. But the fly remained wholly wild and free, living in man's house as a tolerated pest, as rats and mice do.

Only when the fly finally became recognized as a disease-carrying pest that could no longer be tolerated did man take the trouble to domesticate it. Nowadays, in a considerable number of places, flies are solicitously reared on selected food in large, sanitary cages. Special care is given to insure maximum reproduction and growth to healthy maturity of the insects that emerge after pupation.

This procedure, which a couple of generations ago would have been regarded as sheer lunacy, is carried out in order to secure adequate stocks of flies on which to test the potency of insecticide sprays. When a new batch of spray is ready, a counted number of flies are released into a windowed test chamber. The spray is released under uniform pressure through standardized nozzles.

By tens and fifties the victims fall, while the entomologists coolly watch the slaughter through the window. After a stated time period they count the survivors. If these number more than a certain maximum percent, the batch of spray is rejected as too weak. If the "knockdown" number is high enough, and the eventual kill is also high, the spray receives the official OK.

This business of wholesale production of flies for the insecticide testing laboratories has been going on not quite a quarter-century. When the first domestic fly sprays were produced, back in the early '20s, the winged guinea pigs, needed to assay their deadliness, had to be captured in the wild —usually in the rear of livery stables that still survived at that time.

Soon, however, this haphazard source proved insufficient. It was inadequate qualitatively as well as quantitatively, for comparative tests showed that "wild" flies from the dungheap were not as strong and tough as those hand-raised on more carefully selected foods, and hence not as good test animals.

Oddly enough, it was found that the best fly food is milk. Milk-fed flies are quite the opposite of tender; in Flydom, "milksop" means "toughie."

Science News Letter, May 16, 1953

PSYCHIATRY

Chemical Treatment Relieves Migraine Bouts

➤ PROLONGED BOUTS of migraine headache have been relieved by a new treatment reported by Dr. Walter O. Klingman of the University of Virginia, Charlottesville, at the meeting of the American Psychiatric Association in Los Angeles.

The treatment consists in giving the patient a medicine called an ion exchange resin. Technically, it is the potassium and ammonium form of a cross-linked polyacrylic (caroxylic) cation exchanger. A similar treatment has been reported effective in relieving the water-logged condition of patients with some forms of heart disease, high blood pressure and cirrhosis of the liver.

A somewhat water-logged condition of the brain with disturbances in the amount of sodium and potassium in nerve cells is believed to play a part in migraine and in other paroxysmal disorders of the nervous system. Among these are epilepsy, and Meniere's disease.

Because of this, Dr. Klingman tried the ion exchange resin treatment. In some cases he also restricts the amount of sodium, or salt, in the diet.

Long standing, chronic cases of Meniere's disease improved and in some instances were completely relieved by the treatment. Patients with headaches from high blood pressure and kidney disease were helped. Epileptics had fewer seizures and their brain wave records showed marked changes.

Science News Letter, May 16, 1953

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ICHTHYOLOGY

Schooling Fish Must See

Vision plays dominant role in the schooling of fish, although other senses may contribute. Only in tuna schools do individual fishes act as leaders.

➤ FISHES THAT cannot see one another will not school, nor even form into aggregations, reports Dr. James W. Atz, ichthyologist of the New York Zoological Society.

Vision plays the dominant role in fish schooling, although other senses like touch, hearing and smell may have lesser parts, Dr. Atz told the meeting of the American Society of Ichthyologists and Herpetologists in New York. He presented to the group a review of what is now known about the schooling phenomenon.

A true school of fish is a group in which all individuals are facing in a common direction, parallel and regularly spaced, and moving at a uniform speed. Aggregations are groups in which fishes are attracted together but without uniform spacing or direction.

There may be cases of "false schooling," when aggregations of fishes line up in the same direction in response to a water current. In an experiment with sunfish, *Lepomis,* an aggregation of the fishes all lined up regularly when a current was started in their tank, but the group broke up as soon as the flow was stopped.

One popular theory explains fish schooling to work essentially this way: 1. Two or more fishes swim towards each other when they come into visual range; 2. they line up in parallel paths to keep each other in the desired close range while on the move or in a strong current; 3. a certain antagonism, however, may act to keep them at a minimal distance apart.

Another idea is that schooling fishes use one another as visual reference points, to help locate themselves in the empty space of water. Typical schooling fishes are usually those of the open sea, where there is practically nothing—except another fish—for a constantly moving fish to fix upon to give him a sense of location.

In general, fishes in the center of a school are much closer together than those nearer the edge. With the exception of tuna schools, there are no reports that individual fishes act as leaders of schools.

Science News Letter, May 16, 1953

PUBLIC HEALTH

One-Shot Syphilis Cure

➤ THE HALF-CENTURY old dream of a "magic bullet" to cure syphilis with one shot seems to have been achieved with a new form of penicillin, first of the so-called mold remedies. The new penicillin is called Bicillin by its manufacturer, Wyeth Laboratories of Philadelphia.

Its safety and efficiency in a test group of 125 patients was reported by Dr. Clarence A. Smith, assistant chief of the Public Health Service's venereal disease division, at a symposium on venereal diseases in Washington.

Because Bicillin contains another chemical besides penicillin, the penicillin remains in the blood for a month or longer. That means that one dose can take the place of the many doses of regular penicillin otherwise required to rout the syphilis spirochetes completely.

The need for repeated visits to doctor, clinic or hospital in the past has been one of the big drawbacks to efforts to cure patients and wipe out syphilis. Too many patients, after the first treatments relieved symptoms, just did not return to complete the cure.

Of the 125 patients given one dose of Bicillin, 94% had negative blood tests a year after treatment, Dr. Smith reported. Of the six percent found positive, some were traced to new infection.

The drug protected babies from congenital syphilis when given to their mothers during pregnancy and it was effective in secondary as well as primary syphilis.

Another year at least of follow-up observation is needed, Dr. Smith said, before results of Bicillin treatment can be called conclusive.

The chemical added to penicillin to make it long-acting is N, N-1 dibenzylethylenediamine.

Science News Letter, May 16, 1953

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Questions

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• • •

Photographs: Cover, pp. 309 and 310, National Advisory Committee for Aeronautics; p. 307, U. S. Navy; p. 314, Fremont Davis; p. 320, Eastman Chemical Products, Inc.

Three *television* stations are slated for commercial use in Tokyo; they are the first to carry TV to Asia.

About 240,000,000 cans of *low-sodium foods*—principally fruits, vegetables, meats and fish—will be canned during 1953 for persons who must watch their diets.

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MAGNETIC BULLETIN board uses tiny gold-plated magnets instead of thumbtacks to hold papers in place. The 7 x 9 inch board is leather covered and is mounted on an easel to stand vertically or horizontally. It also can be hung like a picture.

Science News Letter, May 16, 1953

DICTATING MACHINE uses sheets of magnetic-coated paper to record voice that later is to be transcribed by a stenographer. The paper sheets can be reused over 2,000 times, folded, written upon and mailed. By backspacing the machine and re-recording, the user can correct dictation errors. The machine plays back the dictation through a built-in loudspeaker.

Science News Letter, May 16, 1953

SURGICAL SPONGE is treated with barium sulfate to make it detectable under X-rays. When a doctor wonders if he has left a sponge inside a patient after an operation, X-rays will reveal this sponge's presence. No "exploratory operation" is required.

Science News Letter, May 16, 1953

SPEAR-SHOOTER, for fishermen who disdain rod and reel, is a butyrate plastic model of the bamboo-and-rubber Hawaiian

sling, as shown in the photograph. The spear is inserted into a round holder and is shot out "slingshot style" by a rubber sling attached to the rear of the device.

Science News Letter, May 16, 1953

INSECT KILLER vaporizes a potent chemical, a development from Lindane, and is said to keep the average-size house free of flies, moths, mosquitoes and silverfish. The small device plugs into ordinary household electrical outlet and vaporizes the odorless chemical which is deadly to insects but harmless to humans and domestic animals.

Science News Letter, May 16, 1953

ROD GUIDE holds a fishing rod in the proper position from the sandy bank of a river or from the wooden deck of a boat. The small stand is made of zinc-plated torsion steel to resist corrosion by water and fish oils. It holds the rod so the reel can be braked quickly when a fish strikes the bait.

Science News Letter, May 16, 1953

FLAT-TIRE FIXER dispenses a compound said to fuse with punctured rubber inner tubes and casings, making it unnecessary to change flat tires. The object that punctured the tire is removed first. Then the slender snout of the dispenser is inserted in the rupture. The device pumps in a quick-setting sealing compound. It also repairs tubeless tires, the maker reports.

Science News Letter, May 16, 1953

ILLUMINATED CLIPBOARD with flashlight attachment makes it easier for recordkeepers in railroad switchyards, warehouse and other poorly illuminated places to see what they are trying to check. A small reading light extends over the clipboard to illuminate the paper.

Science News Letter, May 16, 1953

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Do You Know?

Born black, some *seahorses* change color during their early life, but turn black again upon reaching maturity.

Ambergris, found along seashores and valuable as a perfume base, sticks to a red-hot wire instead of melting; it also floats.

Some *helicopter pilots* must operate two controls with their left hand, a third with their right hand and two pedals with their feet.

Moisture-proof and air-tight packaging, with low oxygen, does much to keep today's *powdered milk* from acquiring the "stale" or "tallowy" taste it often had in prewar days.

The recently violent *volcano* on lonely San Benedicto Island, 1,000 miles southeast of San Diego off the Mexican coast, has simmered down to occasional fumeroles producing small spouts of steam and smoke inside the crater.